JUN 12 1998

June 11, 1998

Bob Haslam
Sites Management Section
VT Dept. Of Environmental Conservation
103 S. Main St. - West Office Bldg.
Waterbury, VT 05671-0404

STONE ENVIRONMENTAL INC

Main Office:
58 East State Street
Montpelier, Vermont
05602 USA

Phone / 802. 229.4541
Fax / 802. 229.5417
E-Mail / sei@stone-env.com
Web Site / www.stone-env.com

SEI No. 98-826
RE: Plainfield WWTF Expressway Investigation

Dear Bob:

Stone Environmental Inc. (SEI) has completed the Expressway Site Investigation for the Plainfield Wastewater Treatment Facility (WWTF). This work was performed following our April 20, 1998 notification to you in regards to contaminated soil & groundwater encountered during a fuel oil UST removal. We have been able to adequately define the degree & extent of fuel oil contamination as detailed in the attached Initial Site Investigation. There is no significant impact beyond the small area initially excavated for the UST removal and the perched groundwater system has not been impacted at levels exceeding VT groundwater enforcement standards.

We have recommended to the Town that any contaminated soils removed during the forthcoming WWTF upgrade be handled in accordance with the contaminated soils protocol currently being followed by your Department. We anticipate that less than 50 cubic yards of slightly contaminated soils may be encountered during the upgrade.

We are also enclosing the VT UST closure form that was sent by Sue Thayer in response to our April 20, 1998 formal notification included in Appendix A of our Site Investigation report. Please feel free to contact me or Jeff Kelley, SEI project geoscientist, with any further questions or comments you may have.

Sincerely yours,

Stone Environmental, Inc.

John Amadon, CPSS
Senior Geoscientist

enclosure:
cc: Jay Jewitt, Town of Plainfield
N:\proj-98\98-826\061198ltr.wpd

Southeast Regional Office:
206 Langston Mill Court
Raleigh, North Carolina
27606 USA

Phone / 919. 387.4704
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Pacific Office:
24 Porterfield Street
Macandrew Bay
Dunedin, New Zealand

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E-Mail / hanson@earthlight.co.nz

Phase (check one)	Type (check one)
■ Initial Site Investigation ☐ Corrective Action Feasibility Investigation ☐ Corrective Action Plan ☐ Corrective Action Summary Report ☐ Operations and Monitoring Report	☐ Work Scope ■ Technical Report ☐ PCF Reimbursement Request ☐ General Correspondence

982376

JUN 12 10 39 AM '98
WASTE MANAGEMENT DIVISION

INITIAL SITE INVESTIGATION

Plainfield Wastewater Treatment Facility
Plainfield, VT

SEI Project No. 98-826

Contact:
Jay Jewitt
Town of Plainfield
PO Box 217
Plainfield, VT 05667
phone / 802.454-8461

Prepared by:
Stone Environmental, Inc.
58 East State St
Montpelier, VT 05602
Phone / 802.229.4541
fax / 802.229.5417
Contact: John Amadon, Senior Geoscientist

June 11, 1998

EXECUTIVE SUMMARY

A 500 gallon fuel oil underground storage tank (UST) was removed from the Town of Plainfield Waste Water Treatment Plant (WWTF) on April 20 1998 as a preliminary part of an overall WWTF upgrade. The excavation and removal of the former UST was performed by Calkins Oil & Excavating, Inc. Stone Environmental, Inc. (SEI) performed the site assessment phase. The work was done in accordance with the VT Department of Environmental Conservation (VDEC) UST Closure and Site Assessment Requirements. Fuel oil contamination was encountered during the excavation, along with a perched ground water system. The soil contamination was confirmed with a peak reading beneath the UST of 58 ppm measured with a photoionization detector (PID). Mr Bob Haslam of the VDEC was notified of the findings. Due to the nature of the UST location at the WWTF, and the presence of ground water complicating further backhoe exploration, the UST was removed and the excavation was backfilled. The degree and extent of the contamination was later determined to be minimal via an Expressway Site Investigation. Hand augered soil borings around the excavation area showed no detrectable levels of soil contamination down to and within the native silt and fine sands. Using temporary monitroing wells no groundwater impacts above VT Ground Water Enforcement Standards were found. No further remedial investigations are deemed warranted although an estimate of less than 50 cubic yards of slightly contaminated soil may need to be dealt with according to VDEC guidance during the forthcoming WWTF upgrade.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

On April 20, 1998 Stone Environmental Inc. (SEI) supervised the removal of a 500 gallon fuel oil underground storage tank (UST) at the Plainfield, VT Waste Water Tratment Facility (WWTF). The general location of the facility along the Winooski River in the Town of Plainfield is depicted on Figure 1. Mr Jay Jewitt, chief operator of the WWTF, was onsite along with Jeff Kelley of SEI and Dana Calkins who performed the actual excavation, cleaning, and removal of the UST. Both ground water and fuel oil contamination were encountered in the shallow excavation behind the Control Building of the WWTF. The presence of numerous nearby conduits and pipelines associated with WWTF operations precluded more extensive exploratory excavation. A slight sheen was noted on the groundwaters present at a 5 foot depth and the former UST, which did demonstrate pitting and small holes on one side (Appendix A). A soil sample obtained from water saturated soils beneath the former tank registered 58 ppm with a photoionization detector (PID).

The findings encountered during the tank removal prompted SEI to contact Mr Bob Haslam of the Vermont Department of Environmental Conservation (VDEC). It was agreed that it was best to backfill the UST excavation with the contaminated soils and to perform an initial site investigation at the property pursuant to the VDEC Site Investigation Expressway Guidelines. The findings of this investigation are detailed in this report.

2.0 SITE HISTORY AND LAYOUT

The Plainfield WWTF has been in service for 30 years and is currently in the process of an upgrade. Flow rates remain less than 200,000 gallons per day (GPD) with the treated effluent being discharged to the adjacent Winooski River. Mr Jay Jewitt is the licensed operator of the facility for the Town. According to Mr Jewitt, the former fuel oil UST had served as the fuel source for heating the WWTF Control Building but had not been used in nearly two years when fuel oil was replaced by propane.

The facility upgrade has been designed by the engineering firm of Forcier Aldrich & Associates (FA&A) and has recently gone to the construction bidding phase. A portion of the FA&A plans has been used to create the Figure 2 Site Location Map. The former UST was located behind (north) of the Control Building between the Sludge Drying Beds, MH 5 (manhole 5), and several conduits and water lines. The upgrade plans do call for removal/replacement of many of these lines although the footings and foundation of the Control Building are to be kept for a new building. Soils within the area of the former UST will need to be excavated during the construction phase.

The points labeled as SB- and P- on Figure 2 are soil borings that were performed earlier as part of the upgrade design phase. FA&A has provided the Green Mountain Boring (GMB) logs which are included in Appendix B. Based on these logs, SEI's observations during the UST removal, and the presence of numerous subsurface obstructions, SEI chose to pursue the site investigation with the use of hand augers.

3.0 SOIL BORINGS AND MONITORING WELL INSTALLATION

On April 22 a series of soil borings were made in and around the former UST excavation. Four inch diameter bucket augers were used to obtain soil samples in 6 inch depth increments. Soil samples recovered were evaluated for textural classification and relative moisture content. Subsamples were sealed in ziplock® freezer bags pursuant to SEI standard operating procedures. The headspace of each of the soil sample bags was analyzed with a properly calibratedMiniRae® photo ionization detector equipped with a 10.6 eV lamp.

These headspace results are summarized along with textural and moisture classification in Table 1. The locations of each of the hand borings are depicted as SEI 1 through SEI 7 on Figure 3.

It is important to note that the only positive PID assays were recorded from SEI 1 which was bored through the central portion of the area excavated for the UST removal 2 days previous. The maximum PID reading obtained from SEI 1 was in the saturated sands 5 to 6 feet below ground surface at a PID level of 16 ppm. The underlying native silt and fine sand was dry, and did not demonstrate elevated PID assays. Hole collapse of the saturated fill sands precluded further evaluation of the platy silt and fine sand at SEI 1. The dry platy silt and fine sand were also encountered in SEI 4 & 5 (Table 1) and in many of the GMB borings (Appendix B). We believe this soil material does represent a native permeability barrier to downward migration of any fuel oil contaminants, as well as a vertical barrier to the perched groundwaters present in the overlying sands and fill material associated with the WWTF.

Within several of the deeper SEI borings (SEI 1, 4, &5) temporary monitoring wells were installed for aquisition of ground water levels in the perched system and water quality samples for laboratory analysis of the BTEX constituents. An existing, 30 year old, monitoring well (MW-1 as shown on Figure 3) was also measured and sampled. Ground water samples were obtained by gentle baling to preclude extensive entrapment of sediments. The ground water samples were acidified and chilled prior to delivery to the laboratory of Endyne, Inc. located in Williston, VT.

A sample of the collapsed sands within SEI 1 was also obtained for laboratory analysis of the BTEX and TPH constituents and to serve as a representative example of the worst case soil contamination. The headspace PID assay of a subsample of the collapsed sands registered only up to 16 ppm as compared with the 58 ppm recorded during the UST excavation.

4.0 ANALYTICAL RESULTS AND DISCUSSION

Copies of the analytical results, chain of custody, and chromatographic patterns are included in Appendix C. A summary of the results is included as Table 2. The composite soil sample from the contaminated zone in SEI 1 did demonstrate a characteristic chromatographic pattern of #2 fuel oil. The TPH (Total Petroleum Hydrocarbon) value by the modified 8100 methodology was quantified at 196 mg/kg, well below the allowable threshold of 1,000 mg/kg delineated within VDEC guidance. The chromatographic pattern of the soil sample was typical of a #2 fuel oil with only limited evidence of degradation. A #2 fuel oil "standard pattern" has also been included in Appendix C for visual comparison.

The soil sample was also assayed for the benzene, toluene, ethylbenzene, and xylene components (BTEX) by a modified 8260B procedure using GC/MS (gas chromatography/mass spectrometry). Although no soil standards have been formally adopted by the VDEC, the BTEX values summarized in Table 2 are very low. Only the ethylbenzene and xylenes were quantified above the detection limit of 0.01 mg/kg (ppm). The underlying ground water sample from SEI 1 was the only ground water sample demonstrating quantifiable levels of BTEX. As would be expected from a fuel oil incident, no MTBE, a gasoline additive, was quantified.

All concentrations of contaminants that were found in SEI 1 are below the VDEC Ground Water Enforcement Standards.

5.0 EXTENT OF CONTAMINATION

In general, soils encountered during the investigation consisted of sandy fill material, often with stones, overlying a native, gray, platy silt and fine sand deposit of fluvial origin. The fill sands were water saturated starting several feet from ground surface. The underlying stratified platy silt and fine sands were dry. The top of the stratified layer thus serves as a barrier to downward vertical migration of contaminants. Lateral migration of the perched ground water system appears to mimic the southerly flow of the adjacent Winooski River as evidenced by the ground water contours shown on Figure 3 made using the water level data and limited survey performed on April 22.

There is no significant groundwater contamination present onsite from the former fuel oil UST although evidence of soil contamination within the UST excavation area has been confirmed. None of the additional soil borings made around the excavation showed significant evidence of fuel oil contamination. None of the ground water samples taken downgradient from the former UST showed any adverse impacts.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The contaminated soils and groundwater encountered during the UST removal on April 20, 1998 appears to be limited to the area excavated behind (north) of the Control Building and are associatred with sandy fill material associated with the original construction of the WWTF. The excavated area was approximately 168 square feet to a 6 foot depth (approximately 37 cubic yards).

The former UST has not adversely impacted the underlying groundwaters nor do we believe that the ultimate receptor of any LUST contaminants, the Winooski River, has had it's assimilative capacity for receiving WWTF effluent compromised.

It is our recommendation that the WWTF site not be formally added to the VT Hazardous Site's List unless it is necessary to allow for PCF reimbursement. If the site does need to be added to the list we now formally request a SMAC designation.

We further recommend that during the WWTF upgrade the excavation activities along the back (north) wall should be monitored for fuel oil vapors by PID. Soils registering greater than 10 ppm by PID should be segrated and stockpiled onsite for polencapsulation treatment in accordance with VDEC protocols. We anticipate that significantly less than 50 cubic yards of contaminated soil will be encountered

TABLE 1 - Descriptive Soil Logging of 4/22/98 Hand Auger Borings at the Plainfield WWTF

	depth -ft	Texture	PID - ppm*
SEI 1	0-1	clean medium sand fill	<1
	1-1.5	grey& brown, moist sand fill, some stones	<1
	1.5-2	grey& brown, moist sand fill, some stones	<1
	2-2.5	grey& brown, moist sand fill, some stones	<1
	2.5-3	grey& brown, moist sand fill, some stones	<1
	3-3.5	grey& brown, moist sand fill, some stones	<1
	3.5-4	grey& brown, moist sand fill, some stones	1.5/1.0
	4-4.5	grey& brown, wet sand fill, some stones	<1
	4.5-5	grey& brown, wet sand fill, some stones	3.2/2
	5-5.5	grey& brown, wet sand fill, some stones	10.5/5
	5.5-6	grey& brown, wet sand fill, some stones	16.1/8
	6-6.5	grey& brown, wet sand fill, some stones	15.2/10
	6.5-7.7	grey platy, silt & fine sand, dry	1.5/1.0
		refusal at 7.7 feet	
		* peak reading/average reading	
SEI 2	0-3	brown fine sand fill, some stone	<1
	3-3.5	silty fine sand	<1
	3.5-4	fine sandy silt, some organics	<1
	4-4.5	moist fine sandy silt, some stones	<1
	4.5	refusal on pipe/conduit	
SEI 3	0-3	fine sandy fill, rounded stones	<1
	3	refusal on pipe/conduit	
SEI 4	0-4	fine sandy fill, rounded stones	<1
	4-5	moist fine sandy silt, some stones	<1
	5-5.5	moist coarse sand	<1
	5.5-7	wet coarse sand with stones	<1
	7-7.5	grey platy, silt & fine sand, dry	<1

	depth -ft	Texture	PID - ppm
SEI 5	0-3.5	brown stony fine sand fill	<1
	3.5-4.5	moist coarse stony sand fill	<1
	4.5-5.8	platy gray silt loam (dry)	<1
	5.8-7.0	gray fine strat. sand, moist	<1
SEI 6	0-3	brown stony sand fill	<1
	3-3.5	coarse sand, moist	<1
	3.5-3.8	fine sandy silt (dry)	<1
		refusal at 3.8 feet	<1
SEI 7	0-2	brown gravelly sand fill	<1
	2-3	gray gravelly sand fill, moist	<1
	3-4.5	brown gravelly sand fill, wet	<1
		refusal at 4.5 feet	

N:\proj-98\98-826\PIDlog.wb2

TABLE 2 - Analytical Results Summary of 4/22/98 Sampling at the Plainfield WWTF

Sample	SEI 1 5-6.5'	SEI 1	SEI 4	SEI 5	MW-1
Matrix	soil	ground water	ground water	ground water	ground water
Sample Date	04/22/98	04/22/98	04/22/98	04/22/98	04/22/98
Analysis Date	04/27/98	04/27/98	04/27/98	04/27/98	04/27/98
UIP Count	>10	>10	0	0	0
Dilution Factor	100	100	100	100	100
% Surrogate Recovery	107	114	103	113	115
Units	mg/kg	ug/l	ug/l	ug/l	ug/l
Benzene	<0.01	3.0	<1	<1	<1
Toluene	<0.01	7.4	<1	<1	<1
Ethylbenzene	0.014	11.0	<1	<1	<1
Xylenes	0.059	62.3	<1	<1	<1
MTBE	<0.10	<10	<10	<10	<10
BTEX	0.073	83.7	<4	<4	<4
TPH	196	NA	NA	NA	NA

Note: UIP Count is the number of unidentified peaks on the chromatogram

Dilution Factor is the % of sample used where 100% is no dilution and lowest detection limits

NA means not analyzed

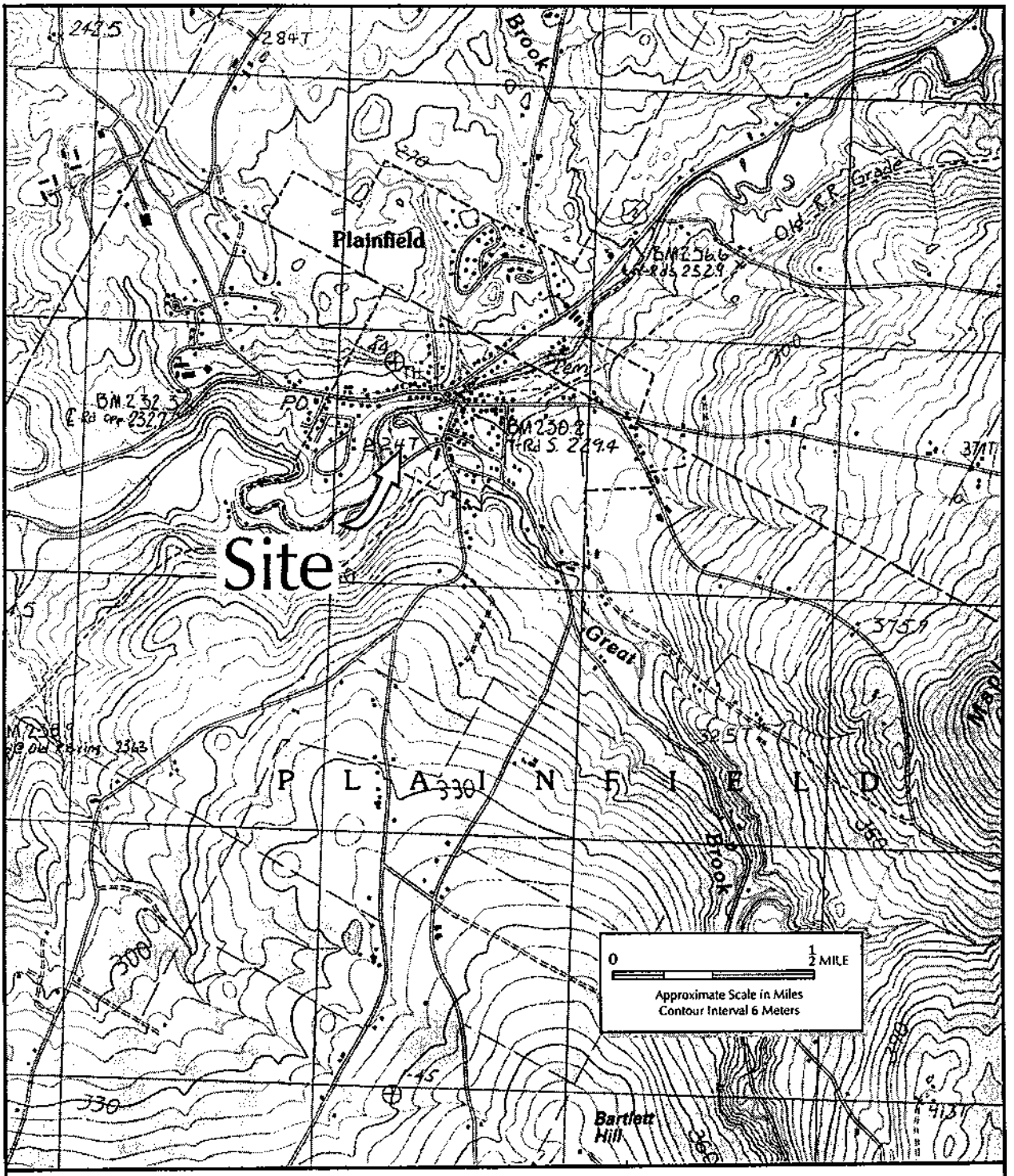

FIGURE 1: GENERAL LOCATION MAP
Plainfield WWTF LUST Investigation
Plainfield, Vermont

Source: Plainfield, Vermont Quadrangle, 7.5 Minute Series, 1:24,000 Scale, USGS, 1986
n:\proj-98\98-826\figures\loc_map.cdr
int:4-23-98 jms

STONE ENVIRONMENTAL INC

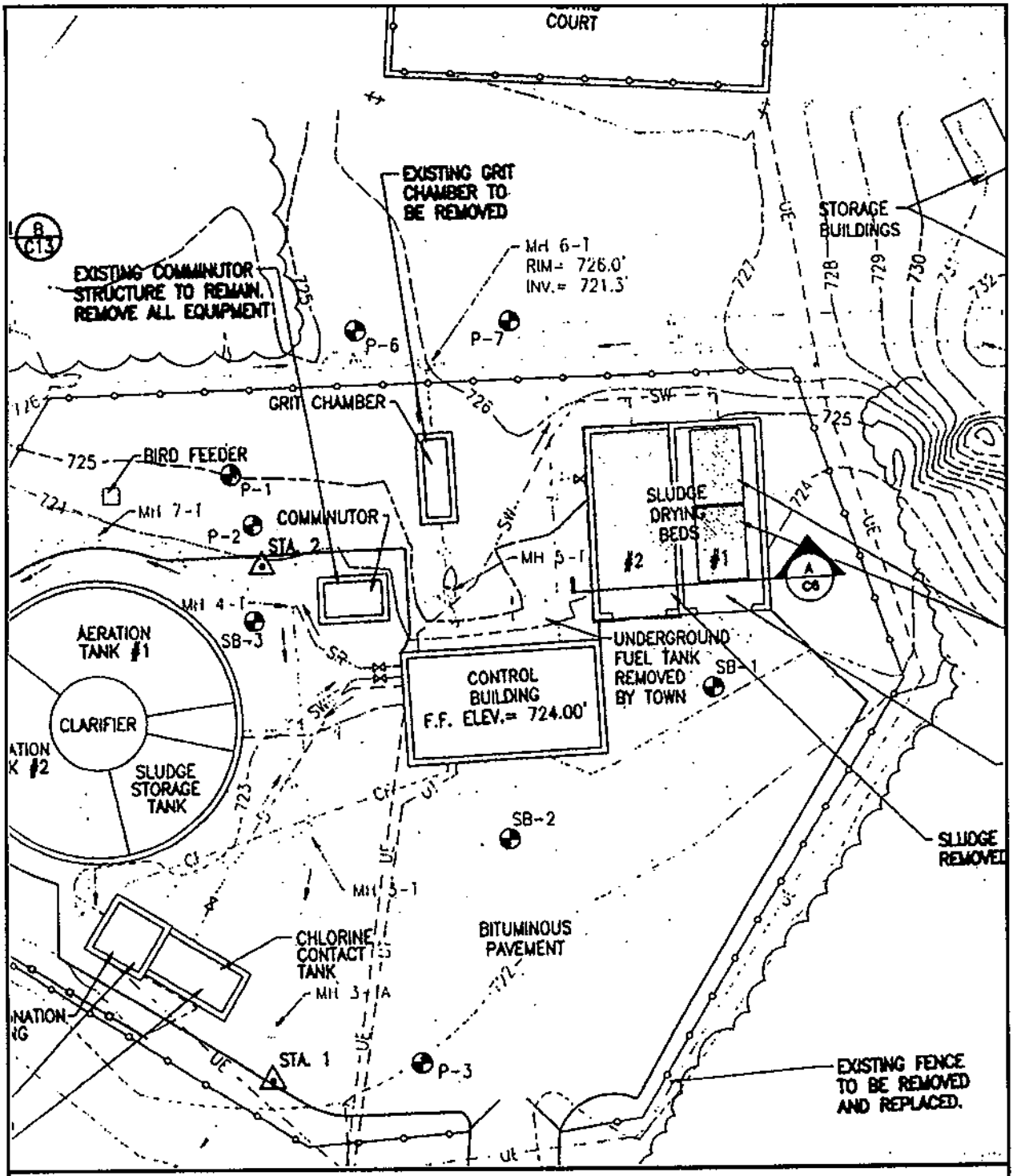

FIGURE 2: SITE MAP FROM FA&A
Plainfield WWTF LUST Investigation
Plainfield, Vermont

0 20 Feet
Approximate Scale

Source: SEI Fieldnotes
n:\proj-98\98-826\figures\site_map.cdr
int:4-28-98 jms

STONE ENVIRONMENTAL INC

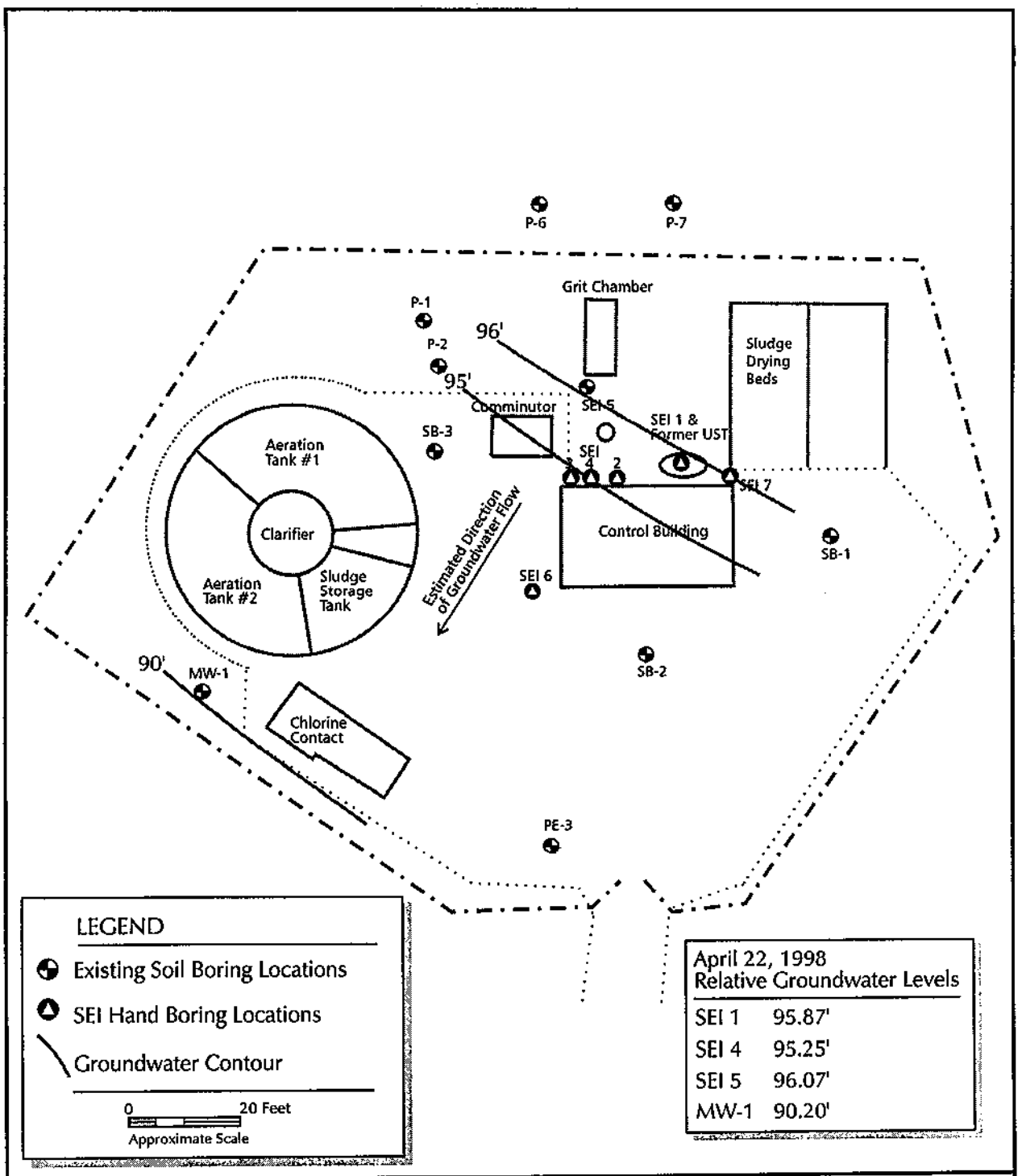

FIGURE 3: MODIFIED FA&A MAP WITH
4/22/98 GROUNDWATER CONTOUR
Plainfield WWTF LUST Investigation
Plainfield, Vermont

Source: SEI Fieldnotes and FA&A site map
n:\proj-98\98-826\figures\gw_cont_4-98.cdr
int:6-11-98 jms

STONE ENVIRONMENTAL INC

APPENDIX A

CORRESPONDENCE

April 20, 1998

Sue Thayer
Agency of Natural Resources
DEC/Waste Management Division
103 South Main Street
Waterbury, VT 05671-0404

STONE ENVIRONMENTAL INC

Main Office:
58 East State Street
Montpelier, Vermont
05602 USA

Phone / 802. 229.4541
Fax / 802. 229.5417
E-Mail / sei@stone-env.com
Web Site / www.stone-env.com

RE: Site Investigation Expressway Notification, Plainfield Waste Water Treatment Plant

Dear Sue:

On April 20, 1998, Stone Environmental, Inc. (SEI) performed an assessment of the soils as part of the removal of an underground storage tank (UST). The tank was 500 gallons and contained #2 heating oil. It was used only for the buildings furnace.

Numerous holes were discovered in the tank during its in-place cleaning, and, upon its removal, we encountered soils with PID readings of up to 58 parts per million (ppm). After discussing the situation with Bob Haslam of the Sites Management Section, we determined that the best course of action was to backfill the soils and determine the extent of contamination during a site investigation.

Based on our understanding (as well as Mr. Haslam's) of the Petroleum Clean-Up Fund (PCF), this site will not be required to meet the PCF deductible. Enclosed is our Site Investigation Expressway Notification Form. We are scheduled to perform the investigation on Wednesday, April 22, 1998.

Please call with any questions you may have.

Sincerely yours,

Stone Environmental, Inc.

Jeff Kelley
Project Geoscientist

Reviewed By:
C:\KELLEY\SEI\pfield_wwtp.wpd

Southeast Regional Office:
206 Langston Mill Court
Raleigh, North Carolina
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State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Waste Management Division
103 South Main Street/West Office
Waterbury, Vermont 05671-0404
(802) 241-3888, FAX (802) 241-3296

SITE INVESTIGATION EXPRESSWAY NOTIFICATION FORM

Site Owner: Town of Plainfield

Site Name, Town: Wastewater Department

✓ Yes, this site will participate in the Site Investigation Expressway Process.

___ No, this site will not participate in the Site Investigation Expressway Process.

If yes, please complete the checklist below:

✓ Contamination present in soils above action levels ✓ Yes ___ No

If yes, summarize levels: Soils in Tank pull area (500 gallon heating oil) had maximum PID readings of 58 ppm

✓ Free product observed ___ Yes ✓ No

✓ Groundwater contamination observed ✓ Yes ___ No

✓ Surface water contamination observed ___ Yes ✓ No

✓ Suspected release of hazardous substances ✓ Yes ___ No

If yes, please explain: Leaks observed in 500 gallon heating oil tank

✓ Affected receptors ___ Yes ✓ No

If yes, please identify receptors including names and addresses of third party receptors:

Please provide an estimated date of when you expect to submit Site Investigation Report: 5-1-98

Owner's Signature/Date: _____ Consultant's Signature/Date: Jeff Kelley 4-20-98

The SMS has reviewed this expressway notification form and approves / disapproves of this action.

SMS Signature/Date: _____

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To JEFF KELLEY	From STAMER
Co. STONE ENV.	Co. ST OF VT
Dept.	Phone # 241 2361
Fax #	Fax # 229 5417

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CALKINS OIL & EXCAVATING, INC.

P.O. Box 370 • Danville, VT 05828 • 802-684-3375 • Fax: 802-684-3454

RECEIVED
MAY 04 1998
By

April 29, 1998

Mr. Jay Jewett
Town of Plainfield
P.O. Box 217
Plainfield, VT 05667

Dear Jay:

On April 20, 1998 at approximately 8:15 a.m., Calkins Oil & Excavating, Inc. arrived at The Town of Plainfield Waste Water Treatment Plant on Recreation Field Road in Plainfield, Vermont. The town equipment had previously exposed the top of this UST and disconnected all fill, suction and vent lines to the tank. The tank had previously been pumped out by the town. Calkins Oil & Excavating's personnel then proceeded to complete uncovering the 500 gallon underground storage tank (UST), which last contained #2 heating oil. The top of the tank was approximately 2 to 2.5 feet below the surface.

We continued excavating the UST on the side away from the treatment building. At center level of the tank we uncovered an angle iron that had previously been welded to the side of the UST anchoring it to what we suspected to be a concrete pad. After excavating approximately 2' beside we observed water table and noticed a small amount of oil pooled next to the tank.

Calkins Oil & Excavating then proceeded to test the air from within the tank with a LEL 02 Meter. The readings confirmed that the air from within was safe for cutting. We proceeded to saw cut the top of the tank, half exposing one side of the tank. We then entered and clean the inside of the tank before removing. All the waste, debris and adsorbents from cleaning the tank were placed in (1) D.O.T. approved 55 gallon drum, sealed and labeled for disposal.

Soil samples were then taken from around the tank by Jeff Kelley of Stone Environmental and the readings confirmed the contamination. The tank was then removed from its underground location. As the tank was extracted from its position, you could visually see the holes in the side of the tank. Additional soil samples were pulled from beneath the tank.

Jeff Kelley of Stone Environmental then contacted the State of Vermont, Underground Storage Tank Division and reported his findings and a determination was made by both parties to place all the soils back in the hole. Any further information in reference to this tank pull will be documented and submitted by Jeff Kelley of Stone Environmental, 58 East State Street, Montpelier, Vermont, 802-229-4541.

Should you have any questions in reference to the above, please feel free to contact me at 802-684-3375.

Very Truly Yours,

Dana E. Calkins

Dana E. Calkins, Pres.
Calkins Oil & Excavating, Inc.

cc: Marc Roy, State of Vermont
Jeff Kelley, Stone Environmental

APPENDIX B

EXISTING SOIL LOGS

GREEN MOUNTAIN BORING
PO Box 218 * East Barre, Vermont 05649 * 802 476-5073

TO: Forcier Aldrich and Associates
6 Market Place, Suite 2
Essex Junction, VT 05452
Attn.: Kevin Camara

PROJECT NAME: Plainfield Sewage Plant

LOCATION: Plainfield, VT

GMB JOB #: 97-114

SHEET	1
DATE	10/2/97
HOLE #:	SB-1
LINE & STA.	
OFFSET:	

Ground Water Observations			Surface Elev.:	
			Date Started:	102/97
	Type	Augers	Split Spoon	Date Completed: 10/2/97
At 6' at 2 hours	Size I.D.	4.25	13/8"	Boring Foreman: Jamie Bernasconi
	Hammer Wt.		140#	Inspector:
At at hours	Hammer Fall		30"	Soils Eng.:

LOCATION OF BORING: As shown (East side of Bldg.)

Depth	Casing Blows Per Foot	Sample Depths From/To	Type of Sample	Blows per 6" on Sampler	Moisture Density or Consist.	Strata Change Elev.	Soil Identification	Sample No.	Pen	Rec.
		0'-2'	SS	3/5/4/4	dry		3" Black top 4" of sand and stone into silt	1	24"	12"
		5'-7'	SS	12/20/15/13	moist		No recovery	2	24"	0"
		10'-12'	SS	100 for 3"	wet		Stone with sand and some silt	3	24"	3"
							Refusal at 10'3"			

Ground Surface to 10' | Used 4.25" Augers: Then SS to refusal

SUMMARY: Earth Boring 10'3" Rock Coring Samples 3 HOLE # SB-1

GREEN MOUNTAIN BORING
PO Box 218 * East Barre, Vermont 05649 * 802 476-5073

TO: Forcier Aldrich and Associates
6 Market Place, Suite 2
Essex Junction, VT 05452
Attn.: Kevin Camara

PROJECT NAME: Plainfield Sewage Plant

LOCATION: Plainfield, VT

GMB JOB #: 97-114

SHEET:	2
DATE	10/2/97
HOLE #:	SB-2
LINE & STA.	
OFFSET:	

Ground Water Observations			
At 5' at 2 hours	Type	Augers	Split Spoon
	Size I.D.	4.25	13/8"
	Hammer Wt.		140#
At at hours	Hammer Fall		30"

Surface Elev.:	
Date Started:	102/97
Date Completed:	10/2/97
Boring Foreman:	Jamie Bernasconi
Inspector:	
Soils Eng.:	

LOCATION OF BORING: As shown (South side of Bldg.)

Depth	Casing Blows Per Foot	Sample Depths From/To	Type of Sample	Blows per 6" on Sampler	Moisture Density or Consist.	Strata Change Elev.	Soil Identification	Sample No. Rec.	Sample Pen	
		0'-2'	SS	18/8/14/14	dry		Sand with stone	1	24"	5"
		5'-7'	SS	5/3/3/3	moist		Fine sand with silt	2	24"	10"
		8'-9'	SS	86/100 for 4"	wet		Sand with stone	3	24"	8"
							Refusal at 8'9"			

Ground Surface to 6' | Used 4.25" Augers: Then SS to refusal

SUMMARY: Earth Boring 8'9" Rock Coring Samples 3 HOLE # SB-2

Apr-21-98 02:01P FORCIER ALDRICH & ASSOC 802 879 7733 P.03

GREEN MOUNTAIN BORING
PO Box 218 * East Barre, Vermont 05649 * 802 476-5073

TO: Forcier Aldrich and Associates
6 Market Place, Suite 2
Essex Junction, VT 05452
Attn.: Kevin Camara

PROJECT NAME: Plainfield Sewage Plant

LOCATION: Plainfield, VT

GMB JOB #: 97-114

SHEET	3
DATE	10/2/97
HOLE #:	SB-3
LINE & STA.	
OFFSET:	

Ground Water Observations			Surface Elev.:
Hole caved in at 6'	Type	Augers Split Spoon	Date Started: 10/2/97
At at hours	Size I.D.	4.25 13/8"	Date Completed: 10/2/97
	Hammer Wt.	140#	Boring Foreman: Jamie Bemasconi
At at hours	Hammer Fall	30"	Inspector:
			Soils Eng.:

LOCATION OF BORING: As shown (North West side of Bldg.)

Depth	Casing Blows Per Foot	Sample Depths From/To	Type of Sample	Blows per 6" on Sampler	Moisture Density or Consist.	Strata Change Elev.	Soil Identification	Sample No. Rec.	Sample Pen	
		0'-2'	SS	4/4/6/9	dry		3" Black top and sand	1	24"	12"
		5'-7'	SS	8/9/13/6	moist		Gray sand into silt	2	24"	10"
		10'-12'	SS	7/5/6/4	Moist		Brown sand with a trace of clay Organic matter	3	24"	6"
		15'-17'	SS	WORH/3/2/3	moist		Gray clay with silt and stone	4	24"	10"

Ground Surface to 15' | Used 4.25" Augers: Then SS to 17'

SUMMARY: Earth Boring 17' Rock Coring Samples 4 HOLE # SB-3

Apr-21-98 02:01P FORCIER ALDRICH & ASSOC 802 879 7733 P.04

GREEN MOUNTAIN BORING

PO Box 218
East Barre, VT 05649

To: Forcier Aldrich and Associates
6 Market Place, Suite 2
Essex Junction, VT 05452
Attn.: Kevin Camara

Date	10/2/97
Job Name/Site	Plainfield Sewage Plant
Job Number	97-114
Crew	Jamie and Paul
Inspector	Kevin Camara

P.O.C.

HOLE #	OFFSET	STATIC LEVEL		SOILS	AUGER REFUSAL	DEPTH
P-1	None	None	0'-4' 4'-10.5'	Sand Gray fine sand with silt (stone at 5')	Refusal at 10.5'	10.5'
P-2	None	9'	0'-2.5' 2.5'-15'	Sand Gray silt with clay		15'
P-3	None	6'	0'-2' 2'-10'	Brown sand Gray sand with silt		10'
P-4	None	None	0'-2' 2'-5'	Sand Silt with sand and organics		5'
P-5	None	None	0'-5'	Sand into sand silt with organics		5'
P-6	None	9'	0'-10'	Fine sand with a trace of stones (stone at 6') Fill at 10'		10'
P-7	None	None	0'-10'	Fine sand with a trace of stones (stones at 8') Fill at 10'		10'
P-8	None	8'	0'-15'	Brown sand with silt (12'+ some stones)		15'

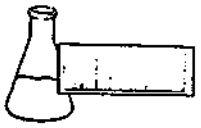
TOTAL FOOTAGE: 80.5'

AUGERS USED: 4.5" solid augers

Apr-21-98 02:01P FORCIER ALDRICH & ASSOC 802 879 7733 P.05

APPENDIX C

ANALYTICAL RESULTS & CHROMATOGRAPHIC PATTERNS



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Stone Environmental, Inc.
PROJECT NAME: SEI Plainfield WWTF
REPORT DATE: April 27, 1998
DATE SAMPLED: April 22, 1998

PROJECT CODE: STON1384
REF.#: 119,722 - 119,726

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

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(802) 879-4333
FAX 879-7103

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Stone Environmental, Inc.
PROJECT NAME: SEI Plainfield WWTF
CLIENT PROJ. #: 98-826

DATE RECEIVED: April 27, 1998
REPORT DATE: April 27, 1998
PROJECT CODE: STON1384

Ref. #:	119,722*	119,723	119,724	119,725	119,726
Site:	SE1-1.70	SE1-1	SE1-4	SE1-5	MW-1
Date Sampled:	4/22/98	4/22/98	4/22/98	4/22/98	4/22/98
Time Sampled:	12:15	1:30	2:20	1:38	1:55
Sampler:	Amadon/Kelley	Amadon/Kelley	Amadon/Kelley	Amadon/Kelley	Amadon/Kelley
Date Analyzed:	4/27/98	4/27/98	4/27/98	4/27/98	4/27/98
UIP Count:	>10	>10	0	0	0
Dil. Factor (%):	100	100	100	100	100
Surr % Rec. (%):	107	114	103	113	115
Parameter	Conc. (ug/kg)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<10.	3.0	<1	<1	<1
Chlorobenzene	<10.	<1	<1	<1	<1
1,2-Dichlorobenzene	<10.	<1	<1	<1	<1
1,3-Dichlorobenzene	<10.	<1	<1	<1	<1
1,4-Dichlorobenzene	<10.	<1	<1	<1	<1
Ethylbenzene	13.7	11.0	<1	<1	<1
Toluene	<10.	7.4	<1	<1	<1
Xylenes	58.5	62.3	<1	<1	<1
MTBE	<100.	<10	<10	<10	<10

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

* Results generated from analysis by EPA 8260; Percent solid for sample SEI-1-7.0: 95.%

ENDYNE, INC.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

STON1385

RUSH

CHAIN-OF-CUSTODY RECORD

119,722 — 119,727

26588

Project Name: SE1 98-826 Site Location: Plainfield UMTF	Reporting Address: 58 E. State St. Montpelier, VT 05602	Billing Address: Same
Endyne Project Number: STON 1384	Company: Stone Environmental Inc. Contact Name/Phone #: John Amadon 229-1880	Sampler Name: John Amadon / Jeff Kelley Phone #: 229-4541

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
119,722	SE1-1-7.0	Sat. Soil	X		4/22/98 12:15	2	40ml VOA		BTEX+MTBE TPH(8100)	Chill	
119,723	SE1-1	ground water	X		4/22/98 1:30	2	40ml VOA		BTEX+MTBE	Chill HCl	
119,724	SE1-4	"	"		4/22/98 2:20	"	"		"	"	
119,725	SE1-5	"	"		4/22/98 1:38	"	"		"	"	
119,726	MW-1	"	"		4/22/98 1:55	"	"		"	"	

RUSH

SE1-4

SE1-5

SE1-1

Relinquished by: Signature	Received by: Signature	Date/Time 4/23/98
Relinquished by: Signature	Received by: Signature	Date/Time 4/27/98 6:00

New York State Project: Yes ____ No ____

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify): BTEX + MTBE on all samples using either 'Bart' or Homer										

TPH by 8100 (modified) only on Soil sample using San Gert

ENDYNE, INC.

Laboratory Services

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REPORT OF LABORATORY ANALYSIS

CLIENT: Stone Environmental, Inc.
PROJECT NAME: SEI 98-826
DATE REPORTED: April 28, 1998
DATE SAMPLED: April 22, 1998

PROJECT CODE: STON1385
REF. #: 119,727

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated proper sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: April 28, 1998
CLIENT: Stone Environmental, Inc.
PROJECT: SEI 98-826
PROJECT CODE: STON1385
COLLECTED BY: J.A. & J.K.
DATE SAMPLED: April 22, 1998
DATE RECEIVED: April 27, 1998

Reference #	Sample ID	Concentration (mg/kg)[1]
119,727	SEI-1-7.0: 12:15p.m.	196.

Notes:

1 Values quantitated based on the response of #2 Fuel Oil. Method detection limit is 5.0 mg/kg.

ENDYNE, INC.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY RECORD

RUSH

RUSH

26588

Project Name: SEI 98-826. Site Location: Plainfield WWTF	Reporting Address: 58 E. State St. Montpelier, VT 05602	Billing Address: Same
Endyne Project Number: STON1385	Company: Stone Environmental Inc. Contact Name/Phone #: John Amadon 229-1880	Sampler Name: John Amadon / Jeff Kelley Phone #: 229-4541

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
119,707	SE1-1-7.0	sat. soil	X		4/22/98 12:15	2	40ml VOA		BTEX+MTBE TPH(8100)	Chill	
	SE1-1	ground water	X		4/22/98 1:30	2	40ml VOA		BTEX+MTBE	Chill, HCl	
	SE1-4	"	"		4/22/98 2:20	"	"		"	"	
	SE1-5	"	"		4/22/98 1:38	"	"		"	"	
	MW-1	"	"		4/22/98 1:55	"	"		"	"	

RUSH

Relinquished by: Signature [signature]	Received by: Signature [signature]	Date/Time 4/23/98
Relinquished by: Signature [signature]	Received by: Signature [signature]	Date/Time 4/27/98 8:00

New York State Project: Yes ____ No ____

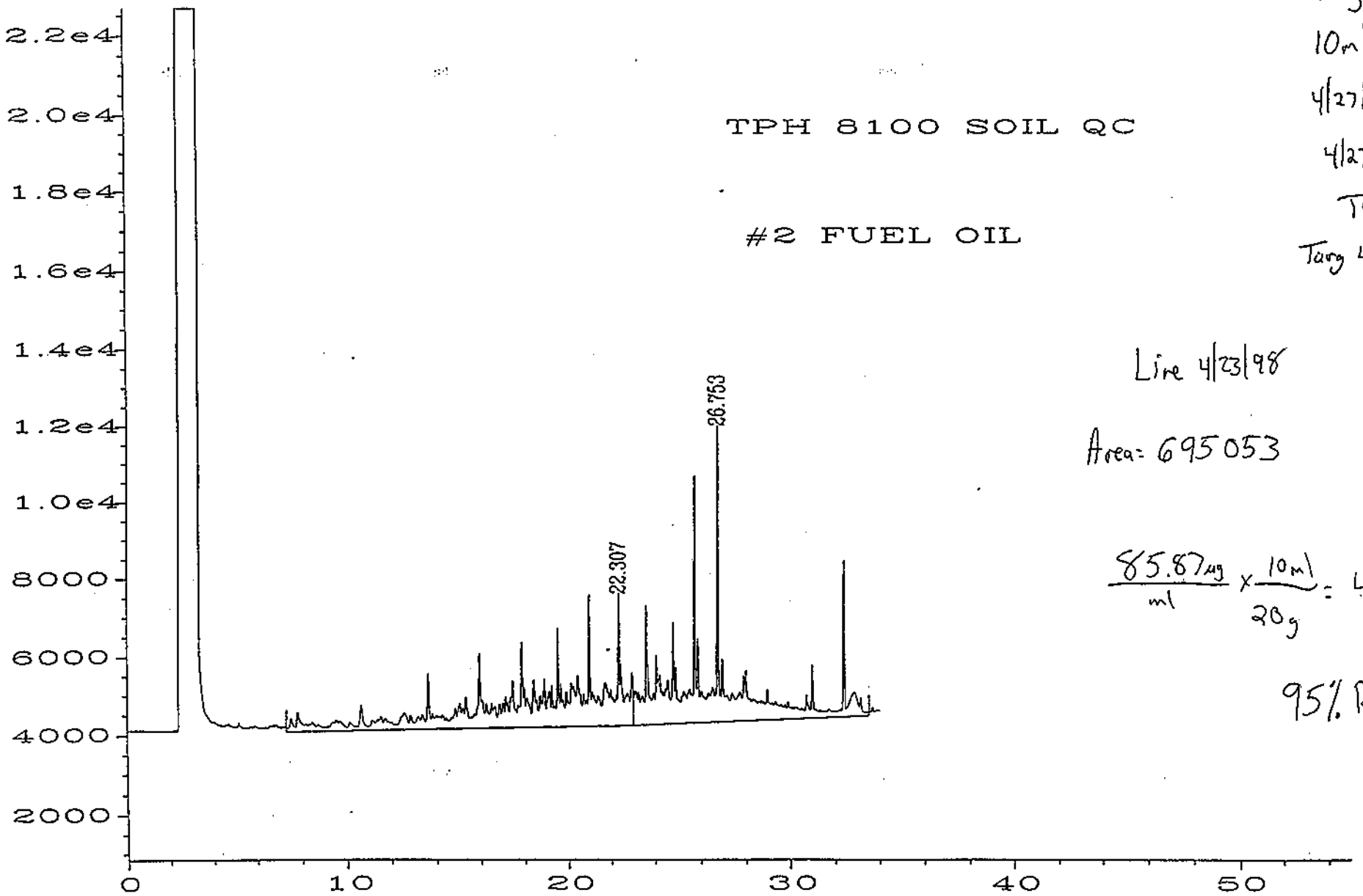
Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD,	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		

29 TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)

30 Other (Specify): BTEX + MTBE on all samples using either 'Bart' or 'Homer'
TPH by 8100 (modified) only on soil sample using same GC

user modified



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Soil QC
20g
10ml
4/27/98
4/27/98
TC
Targ 45.1

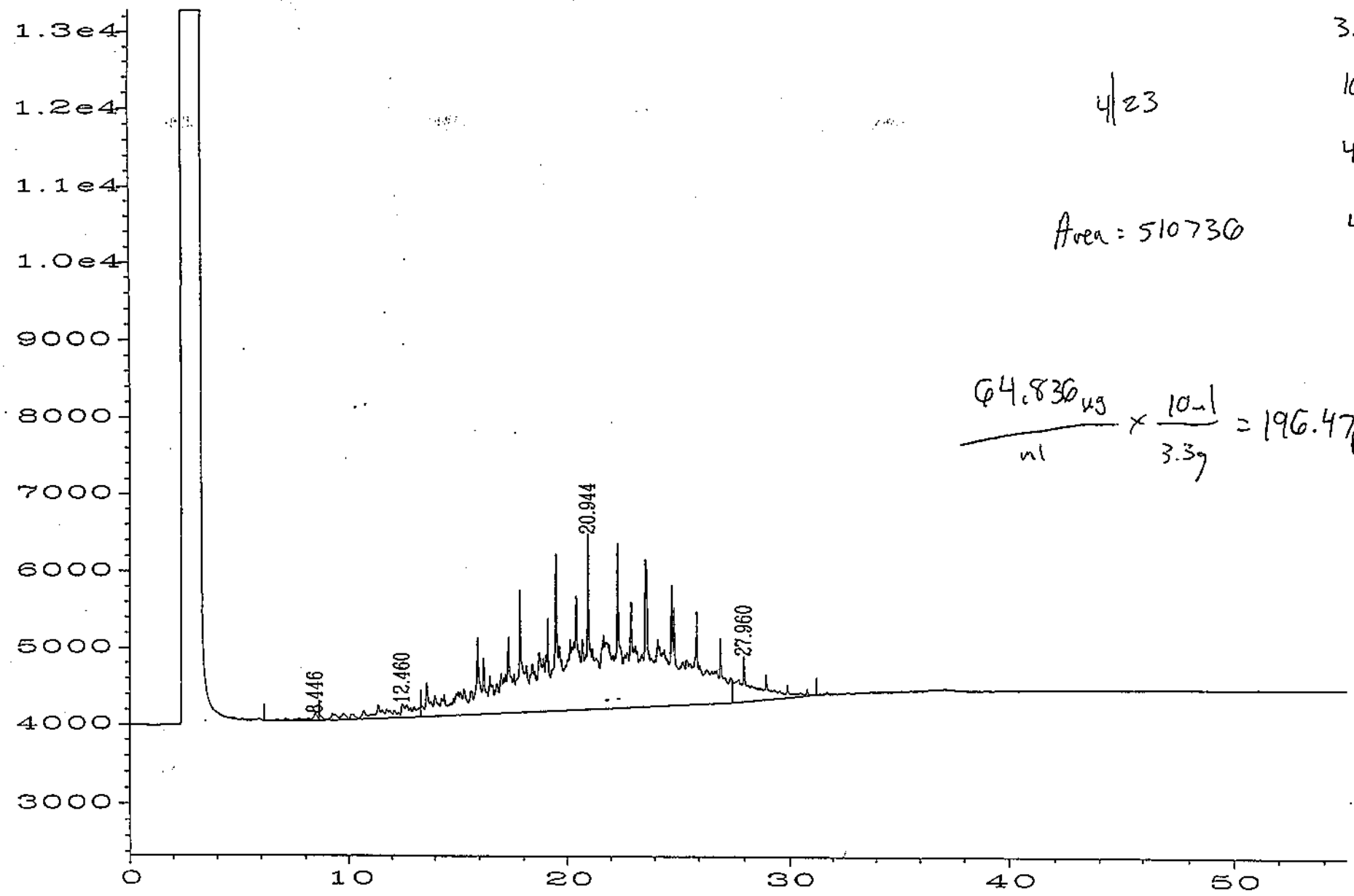
Line 4/23/98

Area: 695053

$\frac{85.87\,\mu g}{ml} \times \frac{10\,ml}{20\,g} = 42.9$

95% Recov

user modified



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1197

3.3g

10.0

4/23

4/27

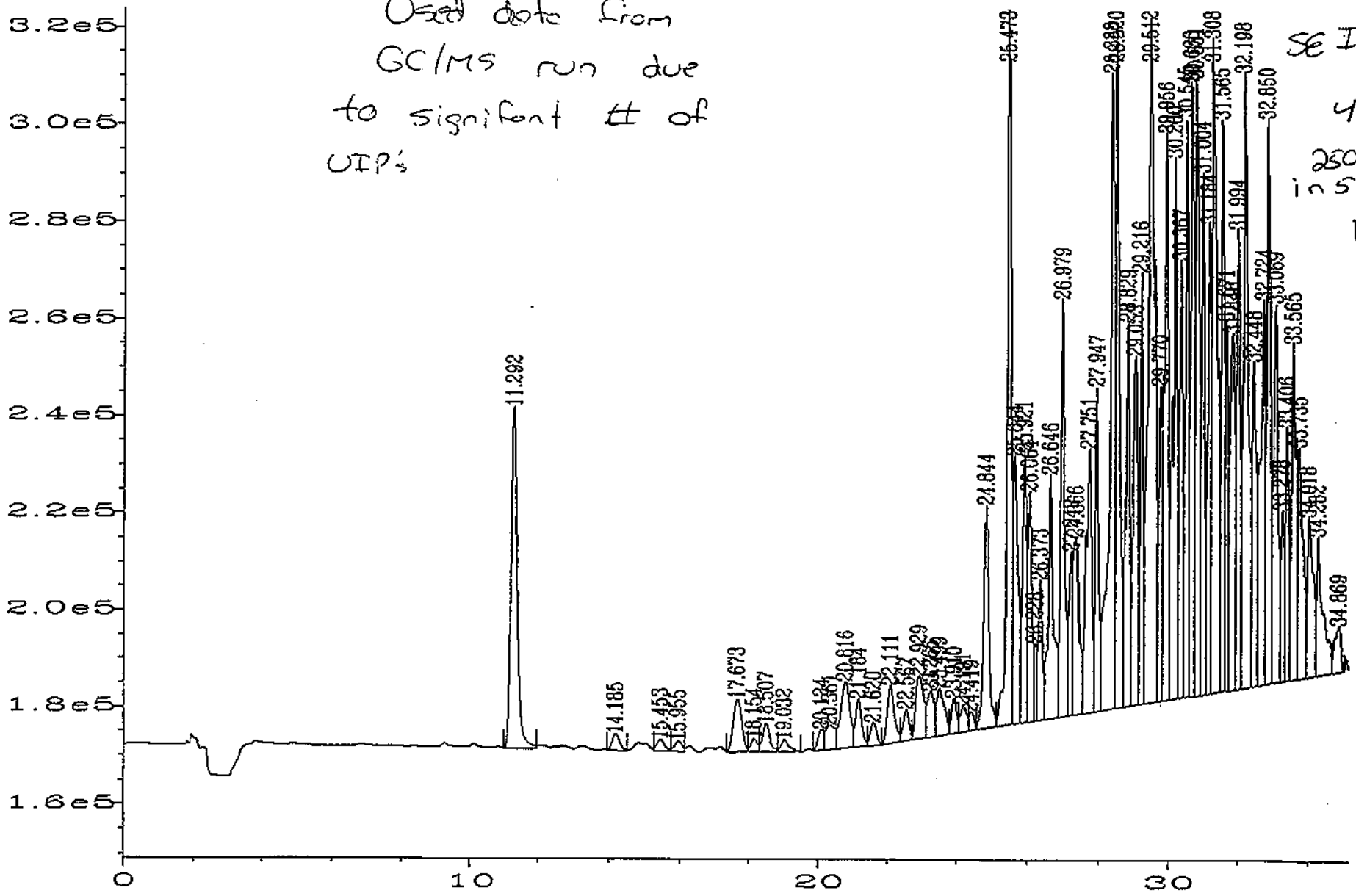
4/27

Area = 510730

4/27

TC

$$\frac{64.836\ \mu g}{ml} \times \frac{10\ ml}{3.3g} = 196.47\ ppm$$



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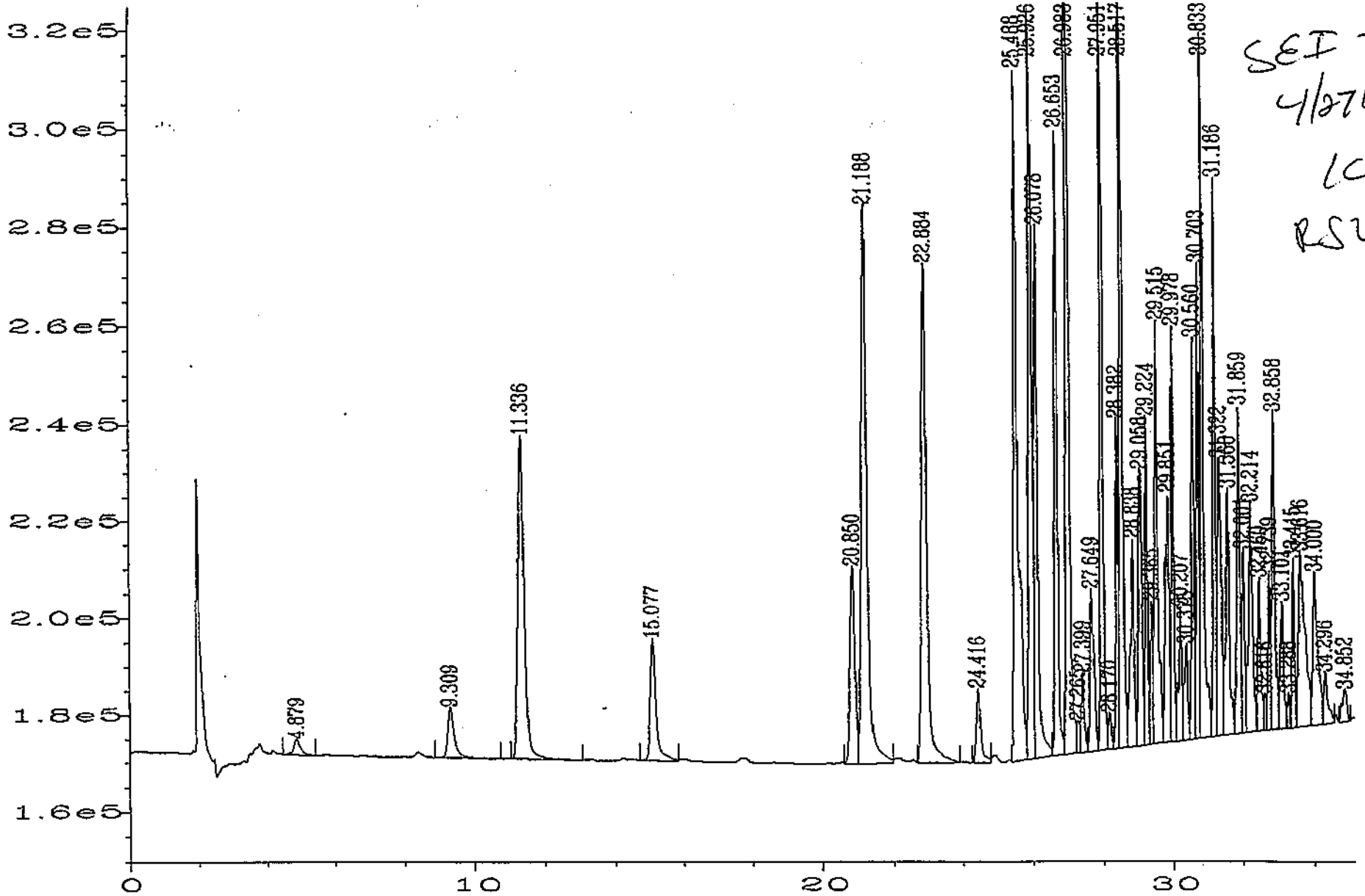

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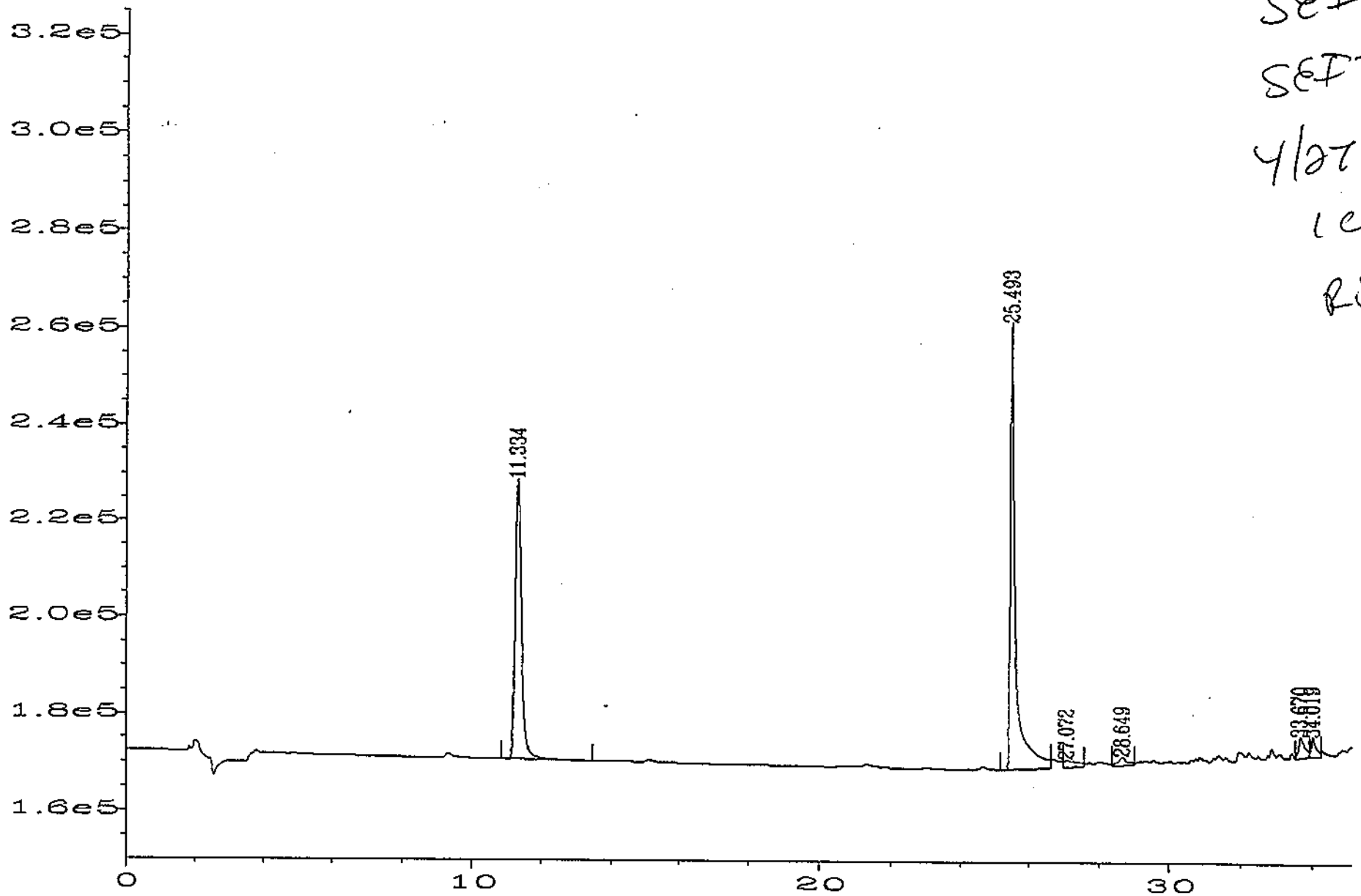
119704
SEI
SEF-4
4/27/94
1 coil
RSV



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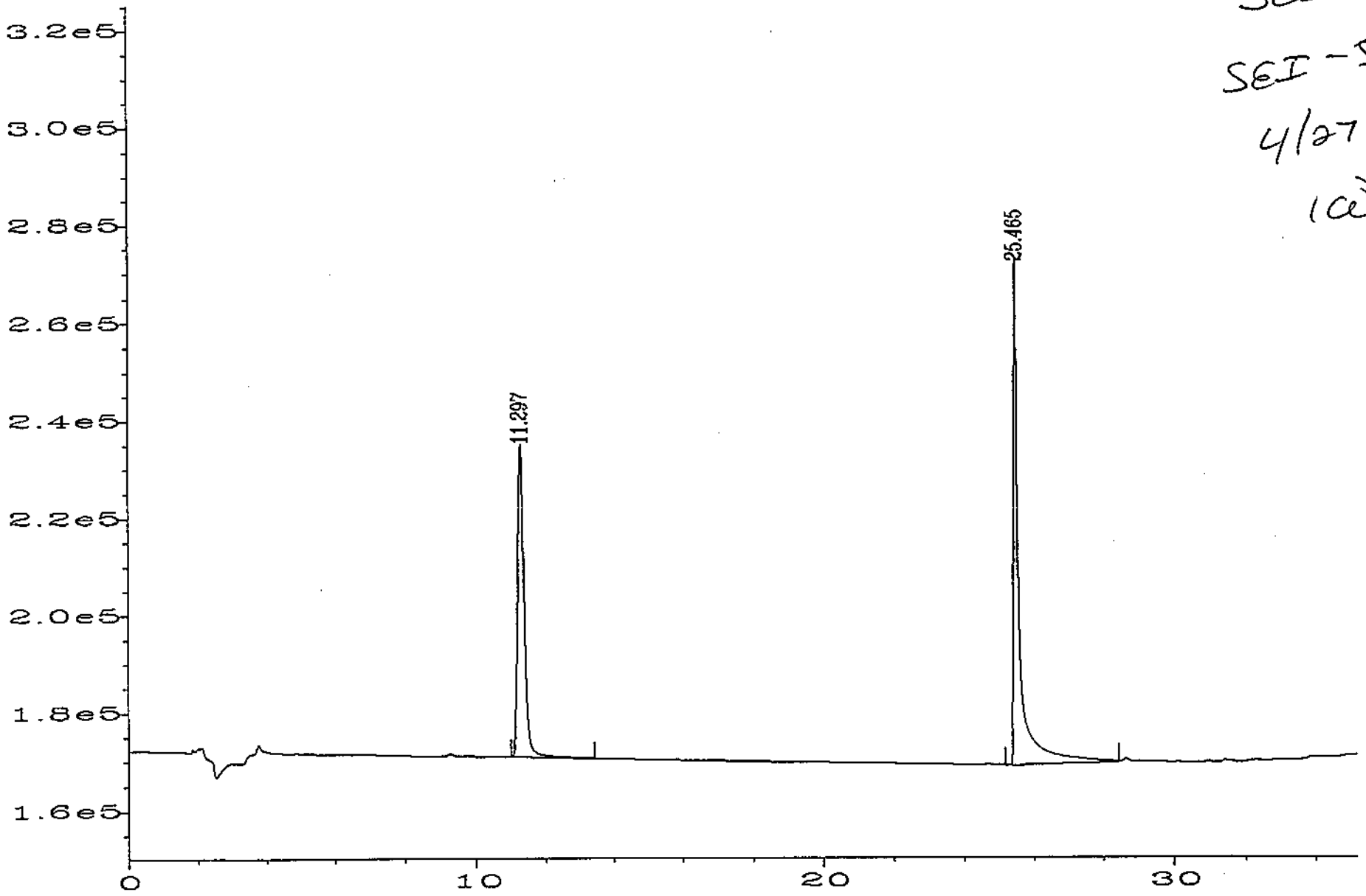
119725
SEI
SEI-5
4/27/98
10%.



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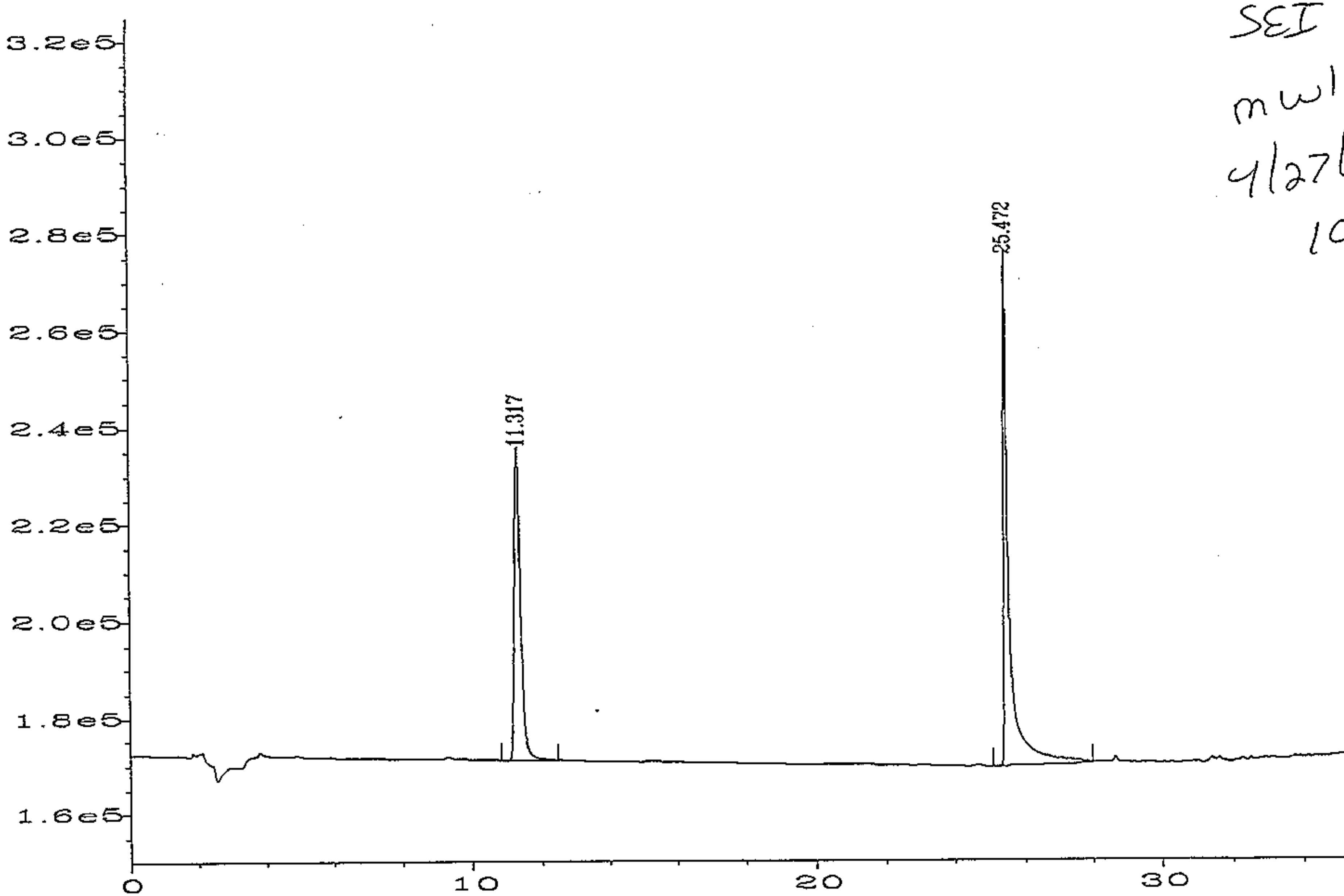
119726
SEI
mwl
4/27/98
1cwl



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JUN 1 2 1998

UNDERGROUND STORAGE TANK PERMANENT CLOSURE FORM

Agency Use Only
Facility ID#_____
Date of scheduled activity: 4/20/98
Facility Town PLAINFIELD
DEC Official ST Eval. by_____

Vermont Agency of Natural Resources
Dept.of Environmental Conservation
Waste Management Division
103 South Main Street, West Building
Waterbury, Vermont 05671-0404
Telephone: (802) 241-3888

Site assessement company: _____
Site assessor: _____
Phone Number of company (or person): ( )
Date of UST closure: __/__/__
Date of site assessment: __/__/__

Section A. Facility Information:
Name of facility: PLAINFIELD WASTE WATER TREATMENT Number of employees: 2
Street address of facility: _____
Owner of UST(s) to be closed: Town of Plainfield Contact(if different than owner): Jay Jowitt
Mailing address of owner: PO Box 217 Plainfield VT 05667
Telephone number of owner: 454-8461 Contact telephone #: 454-7173

Section B. UST Closure Information: (please check one)
Reason for initiating UST closure: __Suspected Leak __Liability __Replacement X Abandoned
Which Portion of UST is to be closed: __Tanks __Piping __Tanks & Piping

USTs (piping is considered a part of UST system) undergoing permanent closure. Include condition of USTs

UST #	Product	Size (gallons)	Tank age	Tank Condition	Piping age	Piping condition
1	#2 fuel oil	500	≈ 30 yrs	poor	≈ 30 yrs	poor

Which tanks, if any, will be closed in-place: USTs#_____ Authorized by:_____ Date: __/__/__
Disposal/destruction of removed UST(s): Location_____ Method_____ Date: __/__/__
Amount (gal.) and type of waste generated from USTs:_____
(tank contents are hazardous wastes unless recovered as usable product)
Tank cleaning company **(must be trained in confined space entry)**_____
Certified hazardous waste hauler:_____ Generator ID number:_____

Section C. Initial site characterization:
Work in this section must be completed by a professional environmental consultant or hydrogeologist with experience in environmental sampling for the presence of hazardous materials. A full report from the consultant must accompany this form.

PID information:
Make: Rae Model: Mini Rae Calibration information (date, time, gas): 4/20/98 isobutylene

Excavation information: *(some tank pulls require more than one excavation)*

Tank(s) # and Excavation (A,B,C,etc)	Depth (ft)	Excavation size(ft²)	Peak PID reading	Depth of Peak (ft)	Avg PID reading	Bedrock Depth (ft)	Groundwater encountered? (y/n) and at depth (ft)	Soil type
1	6	14 x 12	58	6	26	?	yes 4'	fill sand over stratified silt & fine sand

Locate all readings and samples on site diagram
Number of soil samples collected for laboratory analysis? 1 results due date 5/1/98
Have any soils been polyencapsulated on site? Yes__ (#yds³____ PID range above zero (low ____ - ____ peak) No X
Have any soils been transported off site? Yes__ list amount (yds³):_____ No X
Location transported to:_____ DEC official who approved_____
Amount of soils backfilled(yds³): PID range above zero low 0 - 58 peak

Facility ID# NA

JUN 12 1998

Section D: Tanks/Piping Remaining/installed

Regardless of size, include USTs at site as to *status, e.g. "abandoned", "in use", or "to be installed". (Most installations require permits and advance notice to this office.)

UST#	Product	Size(gallons)	Tank age	*Tank status	Piping age	*Piping Status

X There are no other tanks at this site.

Section E. Statements of UST closure compliance:

(must have both signatures or site assessment not complete)

As the party responsible for compliance with the Vermont UST Regulations and related statutes at this facility, I hereby certify that the all of the information provided on this form is true and correct to the best of my knowledge.

_____ Date: _____

Signature of UST owner or owner's authorized representative

As the environmental consultant on site, I hereby certify that the site assessment requirements were performed in accordance with DEC policy and regulations, and that information which I have provided on this form is true and correct to the best of my knowledge.

_____ Date: 6/11/98

Signature of Environmental Consultant

Site diagram

See Initial Site Investigation report prepared by Stone Environmental Inc. June 11, 1998